AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1.(Currently amended) A magnetic assembly for an NMR apparatus, comprising a plurality of primary permanent magnets disposed in an annular array about an axis (hereafter "longitudinal axis"), wherein each of the primary magnets has a north and a south pole with an axis extending therebetween, and each of the primary magnets is arranged such that its axis is oriented at a non-parallel angle to the longitudinal axis of the assembly, the assembly further comprising a secondary permanent magnet located on the longitudinal axis, at a position at least partly within the array of primary magnets, ~~the arrangement and/or characteristics of the plurality of magnets being such so as~~ the non-parallel angles of the primary magnet axes and the position of the secondary magnet are selected to create a zone of homogeneous magnetic field at ~~some~~ a location along the longitudinal axis forward of the array (and into ~~the~~ a material when provided).

2. (Cancelled)

3.(Currently amended) A magnetic assembly as claimed in claim ~~2~~ 1, wherein the position of the secondary permanent magnet is adjustable along the longitudinal axis relative to the primary magnets.

4.(Previously presented) A magnetic assembly as claimed in claim 3, wherein the secondary magnet is a cylindrical bar magnet.

5.(Previously presented) A magnetic assembly as claimed in claim 3, wherein the secondary magnet is positioned such that the first and second spatial derivatives of the magnetic field are zero

at some coincident location along the longitudinal axis forward of the array (and into the material when provided).

6. (Cancelled)

7.(Currently amended) A magnetic assembly as claimed in claim ~~6~~ 1, wherein each of the plurality of primary magnets is a cylindrical bar magnet, each having a proximal end at a front of the array, and a distal end at a rear of the array.

8.(Original) A magnetic assembly as claimed in claim 7, wherein each of the plurality of primary magnets is tilted at an angle relative to the longitudinal axis, such that the configuration of magnets is in a substantially symmetrical tapered arrangement.

9.(Original) A magnetic assembly as claimed in claim 8, wherein the tapered arrangement is according to the expression:

$$R = r\left|\cos\beta\right| \sqrt{1 + \frac{1}{\tan^2 \frac{\pi}{N} \cos^2 \beta}} + \left|l \sin\beta\right|$$

$$t = \sqrt{r^2 + \left(\frac{l}{2}\right)^2} \max(\left|\cos(\beta - \phi)\right|, \left|\cos(\beta + \phi)\right|)$$

where

$\phi = \tan^{-1}(\frac{2r}{l})$

N is the number of magnets used,

r is the radius of the magnets,

l is the length of the magnets,

β is the 'cone angle',

R is the 'ring radius' ,

and t is the distance along the longitudinal axis from the front of the array to the geometric centre of the magnets.

10.(Previously presented) A magnetic assembly as claimed claim 8 or 9, wherein the proximal end of each of the plurality of primary magnets is tilted through an angle beta towards the longitudinal axis, such that the configuration of primary magnets is in a substantially symmetrical tapered arrangement, tapering towards the front of the array.

11.(Previously presented) A magnetic assembly as claimed in claim 8 or 9, wherein the proximal end of each of the plurality of primary magnets is tilted through an angle beta away from the longitudinal axis, such that the configuration of primary magnets is in a substantially symmetrical tapered arrangement, tapering away from the front of the array.

12. (Previously presented) A magnetic assembly as claimed in claim 1, wherein the plurality of primary magnets is disposed substantially symmetrically about the longitudinal axis.

13. (Previously presented) A magnetic assembly as claimed in claim 1, wherein the primary magnets are as close together as is physically or reasonably possible.

14. (Previously presented) A magnetic assembly as claimed in claim 1, wherein each of the plurality of primary magnets is substantially identical.

15. (Currently amended) A magnetic assembly as claimed in claim 14 ~~and comprising a secondary permanent magnet located along the longitudinal axis, at least partly within the array of primary magnets,~~ wherein the secondary magnet is of substantially identical dimensions to each of the plurality of primary magnets.

16.(Original) A magnetic assembly as claimed in claim 15, wherein each of the plurality of primary magnets and the secondary magnet is a cylindrical bar magnet having a radius of about 1.8cm and a length of about 5cm.

17. (Previously presented) A magnetic assembly as claimed in claim 1, comprising eight primary magnets.

18. (Cancelled)

19. (Cancelled)

20. (Previously presented) A nuclear magnetic resonance apparatus for one sided access investigations of a material, comprising a magnetic assembly as claimed in claim 1.

21.(Original) A nuclear magnetic resonance apparatus as claimed in claim 20, wherein the nuclear magnetic resonance apparatus is portable.

22. (Previously presented) A nuclear magnetic resonance apparatus as claimed in claim 20, operable to provide investigations into a sample at up to about 10cm.

23. (Previously presented) A nuclear magnetic resonance apparatus as claimed in claim 20, wherein the apparatus is operable in such a fashion as to allow excitation of one volume V_a of the material, being one of a plurality of volumes V_1 to V_n existing as slices along the longitudinal axis.

24.(Currently amended) A nuclear magnetic resonance apparatus as claimed in claim 23, wherein the apparatus is operable to, following excitation of V_a then allow excitation of a second volume V_b being one of the plurality of volumes V_1 to V_n substantially immediately after excitation of V_a without moving the apparatus, by varying an excitation frequency of the apparatus.

25.(Currently amended) A nuclear magnetic resonance apparatus for one sided access investigations of a material, comprising a plurality of primary permanent magnets disposed in an annular array about an axis (hereafter "longitudinal axis"), and a secondary permanent magnet located ~~along~~ on the longitudinal axis, at least partly within the array of primary magnets, the position of the secondary permanent magnet being adjustable along the longitudinal axis relative to the primary magnets~~, the arrangement and/or characteristics of the magnets being such so as~~ to create a zone of homogeneous magnetic field at ~~some~~ a location along the axis forward of the array (and into ~~the~~ a material when provided).

26. (Previously presented) A method of studying the magnetic resonance of a material comprising the steps of:

a) employing an NMR apparatus as claimed in claim 20;

b) generating a sufficiently homogeneous magnetic field over a volume V_a located at a location along the longitudinal axis in the material thereby causing excitation of subject nuclei in the volume V_a; and

c) detecting radio frequency emissions from the subject nuclei in the volume V_a.

27.(Currently amended) A method of studying the magnetic resonance of a material as claimed in claim 26, comprising, subsequent to step c):

d) substantially immediately following excitation of volume V_a, causing excitation of subject nuclei in a volume V_b, wherein V_b is a volume differing from V_a only in its position along the longitudinal axis, wherein said excitation of volume V_b occurs without moving the apparatus from the position in which volume V_a is excited, by varying an excitation frequency of the apparatus; and

e) detecting radio frequency emissions from the subject nuclei in the volume V_b.